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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------------|------------------------|
| 10/699,664 | 11/04/2003 | Toshitaka Minami | 953.1013 | 6476 |
| 21171 | 7590 | 06/28/2007 | | |
| STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005 | | | EXAMINER NGUYEN, TU MINH | |
| | | | ART UNIT 3748 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|-------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 10/699,664 | Applicant(s) MINAMI, TOSHITAKA | |
| | Examiner Tu M. Nguyen | Art Unit 3748 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. An Applicant's Preliminary Amendment filed on November 4, 2003 has been entered.

Claims 3-4 have been amended. Overall, claims 1-4 are pending in this application.

Specification

2. The abstract of the disclosure is objected to because the use of open-ended phrase "comprising" and the use of legal phrase "means". Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 2 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for "the control means operates the exhaust temperature raising means and at the same time controls the switching valve so that the exhaust gas passes through the second continuous regeneration type diesel particulate filter in the case where the exhaust temperature area of the engine is in the extremely low temperature area", does not reasonably provide enablement for "the control means operates the exhaust temperature raising means and at the same time controls the switching valve so that the exhaust gas passes through the second

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continuous regeneration type diesel particulate filter in the case where the exhaust temperature area of the engine is in the low temperature area, but in the area of which the exhaust temperature is higher than that of the extremely low temperature area". The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make use the invention commensurate in scope with these claims.

As shown in Figure 9 in the pending application, a controller operates the exhaust temperature raising control (i.e., post-injection control in step S13) only when the exhaust temperature area of the engine is in the extremely low temperature area (step S12 with YES answer).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claim 1, 3, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wade et al. (U.S. Patent 4,686,827) in view of Carberry et al. (U.S. Patent 6,598,387).**

Re claim 1, as illustrated in Figures 3 and 6, Wade et al. disclose an exhaust gas purifying equipment for a diesel engine comprising:

- a first continuous regeneration type diesel particulate filter (15) disposed in an exhaust passage of an engine,

- a bypass passage (lines 2-6 of column 6) bypassing the exhaust passage at the upstream of the first continuous regeneration type diesel particulate filter,

- a second continuous regeneration type diesel particulate filter (17) disposed in the bypass passage (the filter (17) is porous and has pore size ranging between 5-40 microns (lines 44-49 of column 2) and thus is adapted to trap soot particles larger than 5 microns (see lines 55-57 of column 3),

- a switching valve (36) for switching the flow path of an exhaust gas disposed in said exhaust passage between the bypass passages,

- an exhaust temperature raising means (excess hydrocarbon fuel) for raising the exhaust temperature of the engine (see lines 21-26 of column 7),

- a regeneration detection means for detecting a regeneration request for the first diesel particulate filter (15), and

- a control means for controlling the exhaust temperature raising means and the switching valve in correspondence to the regeneration request detected by the regeneration detection means (see lines 13-25 of column 6),

wherein the control means operates the exhaust temperature raising means, executes a post-injection, and furthermore controls the switching valve so that the exhaust gas passes through the second continuous regeneration type diesel particulate filter (17), in the case where the regeneration detection means detects the regeneration request for the first diesel particulate filter (15).

Wade et al., however, fail to disclose that the regeneration detection means includes an exhaust temperature area detection means for detecting the exhaust temperature area of the engine; wherein the control means operates the exhaust temperature raising means, executes a post-injection, and furthermore controls the switching valve so that the exhaust gas passes through the second diesel particulate filter, in the case where the exhaust temperature area of the engine is an extremely low temperature area.

As shown in Figure 1, Carberry et al. disclose a method to reduce exhaust smoke emissions following extended diesel engine idling for a diesel engine having a particulate filter (48). As indicated in the Abstract and illustrated in Figure 3, Carberry et al. teach that it is conventional in the art to have a regeneration detection means that includes an exhaust temperature area detection means (steps 72, 76, 78, 80) for detecting the exhaust temperature area of the engine; wherein a regeneration of the filter (48) is requested and executed (in step 80) when an exhaust gas temperature is determined to be in an extremely low temperature area for a period of time longer than a threshold value. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Carberry et al. in Wade et al., since the use thereof would have been routinely practiced by those with ordinary skill in the art to effectively reduce exhaust smoke emissions during an extended idling period of the engine.

Re claims 3-4, the modified exhaust gas purifying equipment of Wade et al. discloses the invention as cited above, however, fails to disclose that the post-injection is performed in the

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range of 80° BTDC to 120° BTDC; and that the post-injection quantity is set to 10% to 20% of the main injection quantity.

Wade et al. disclose the claimed invention except for specifying an optimum range of an injection timing for a post-injection between 80° BTDC and 120° BTDC and for specifying an optimum range of a post-injection quantity between 10% and 20% of a main injection quantity. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide specific optimum ranges of the injection timing for a post-injection and of the post-injection quantity, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Prior Art

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents: Wong et al. (U.S. Patent 4,485,621), Moser (U.S. Patent 5,067,319), Webb (U.S. Patent 5,771,683), Kagenishi (U.S. Patent 6,807,807), and Nakatani et al. (U.S. Patent 6,883,310) further disclose a state of the art.

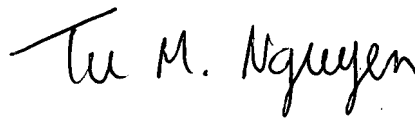
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Communication

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TMN

Tu M. Nguyen

June 24, 2007

Primary Examiner

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